REMARKS

This is intended as a full and complete response to the Office Action dated January 8, 2003, having a shortened statutory period for response extended one month to and including May 8, 2003.

Claim 4 is objected to. Applicants have amended claim 4 to replace "ion beam section" with "beam guide section". Applicants submit that the amendment made herein does not introduce new matter. Applicants respectfully request withdrawal of the objection to claim 4.

The drawings are objected to under 37 CRF 1.83(a). The Examiner states that the frame member as recited in claim 6 must be shown in the drawings or canceled from the claims. Applicants have proposed adding Fig. 6 to the drawings to show the frame member as described in the specification. Applicants further add a brief description of Fig. 6 and amend the description of the frame member to include reference numerals that correspond to Fig. 6. Applicants submit that the amendment made herein does not introduce new matter. Applicants respectfully request withdrawal of the objection to the drawings.

Claims 1-4 stand rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,343,047 ("*Ono, et al*"). The Examiner states that *Ono et al.* discloses an ion implantation system including an ion source section 1, an ion implantation section 8, a charged particle generator 31, a beam guide tube section 9 having an inlet aperture, an outlet aperture and an opening, and a shield section 42 located between the opening and the outlet aperture for irradiating charged particles generated from the generator 31 out of a wafer W.

Applicants have amended claim 1 to more clearly recite aspects of the invention. Applicants believe no new matter has been introduced by the amendments presented herein. As amended, claim 1 specifies a shield section that has a base on the internal wall surface of a guide tube, is located at a position having a space from the opening of an introducing section that introduces charged particles from a generator into the guide tube, and has a shield surface that makes an acute angle with the internal wall surface of the guide tube. The instant application provides a shield section spaced at a distance

from the opening of the introducing section, and thus the shield section does not prevent charged particles from entering the guide tube.

Ono et al. only shows openings 42 in the sidewalls of Faraday cup 9 positioned such that they block the line of sight from the chamber 31 to the wafer. The openings 42 of *Ono et al.* are positioned at the opening of the introducing section such that they block some of the charged particles from entering the guide tube. *Ono et al.* does not show or suggest a shield structure separate from the sidewalls of the guide tube, a shield section having a base on the internal wall of the guide tube, a shield section having a base located at a position having a space from the opening of the introducing section, or a shield surface that makes an acute angle with the internal wall surface of the guide tube. Therefore, *Ono et al.* does not teach, show, or suggest an ion implantation apparatus comprising an ion source section for generating ions, an ion implantation section for implanting said ions generated in said ion source section, in a substrate, a charged particle generator for generating charged particles having a charge opposite to that of said ions, including a filament coil and a plasma generating chamber housing the filament coil, a beam guide section having an inlet aperture for accepting said ions from said ion source section, an outlet aperture for delivering said ions into said ion implantation section, a guide tube extending from said inlet aperture to said outlet aperture, and an introducing section having an opening thereof in an internal surface of said guide tube, for introducing said charged particles from said charged particle generator into said guide tube, and a shield section located between said opening of said introducing section and said outlet aperture, the base of which being on the internal wall surface of said guide tube and being located at a position having a space from said opening of said introducing section, wherein said shield section comprises a shield surface making an acute angle with the internal wall surface of said guide tube, as recited in claim 1. Applicants respectfully request withdrawal of the rejection of claims 1-4.

Claims 5-6 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over *Ono et al.* The Examiner states that it would have been obvious to use a shield having a flat plate surface to make an acute angle with the internal wall surface of the guide

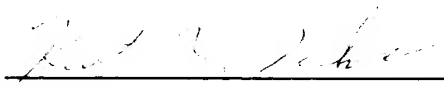
tube in view of U.S. Patent No. 5,378,899 (*Kimber*), and that it would have been obvious to use a frame member to mount the flat plate.

Applicants have amended claims 5 and 6 to more clearly recite aspects of the invention. Applicants submit that the changes made herein do not introduce new matter. As discussed above, Applicants submit that *Ono et al.* does not teach, show, or suggest all of the limitations of claim 2, upon which claims 5 and 6 depend. Applicants submit that *Kimber*, alone, or in combination with *Ono et al.* does not teach, show, or suggest all of the limitations of claims 1 or 2. Applicants further submit that there is no motivation to use the structure 82 of *Kimber* as the shield of *Ono et al.*, as the structure 82 of *Kimber* is an electron shower target that absorbs electrons and deflects electrons such that they hit a target wafer, while the shield of *Ono et al.* prevents particles from hitting a wafer. Furthermore, the apparatus of *Kimber* and *Ono et al.* are substantially different, as *Kimber* does not describe a charged particle generator including a filament coil and a plasma generating chamber, as recited in claim 1. Applicants respectfully request withdrawal of the rejection of claims 5 and 6.

In conclusion, the references cited by the Examiner, neither alone nor in combination, teach, show, or suggest the method or apparatus of the present invention. Having addressed all issues set out in the office action, Applicants respectfully submit that the claims are in condition for allowance and respectfully request that the claims be allowed.

The prior art made of record is noted. However, it is believed that the secondary references are no more pertinent to the Applicants' disclosure than the primary references cited in the office action. Therefore, it is believed that a detailed discussion of the secondary references is not deemed necessary for a full and complete response to this office action. Accordingly, allowance of the claims is respectfully requested.

Respectfully submitted,



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VERSION WITH MARKINGS TO SHOW CHANGES MADE

Please replace the paragraph on page 19, lines 16-25 with the following paragraph:

The shield section 84 of this type can be a flat-plate-shape member which has the shield surface 84a at one end, the shield surface 84a making an acute angle with the wall surface 24d of the guide tube, and which extends in the direction of the ion beam 64 on the internal wall 24d as shown in Fig. 4. Alternatively, as shown in Fig. 6, a [The] shield section [84] 100 may also be constructed of a flat plate 102 one surface of which forms the shield surface [84a] 102a and which extends at an acute angle from the wall surface 24d, and a frame member 104 supporting the flat plate.

IN THE CLAIMS:

Please amend the claims as follows:

1. (Amended) An ion implantation apparatus comprising:

an ion source section for generating ions;

an ion implantation section for implanting said ions generated in said ion source section, in a substrate,

a charged particle generator for generating charged particles having a charge opposite to that of said ions, the charge particle generator including a filament coil and a plasma generating chamber housing the filament coil;

a beam guide section having an inlet aperture for accepting said ions from said ion source section, an outlet aperture for delivering said ions into said ion implantation section, a guide tube extending from said inlet aperture to said outlet aperture, and an introducing section having an opening thereof in an internal surface of said guide tube, for introducing said charged particles from said charged particle generator into said guide tube; and

a shield section located between said opening of said introducing section and said outlet aperture [inside said guide tube], the base of which being on the internal wall surface of said guide tube and being located at a position having a space from said opening of said introducing section, wherein said shield section comprises a shield surface making an acute angle with the internal wall surface of said guide tube.

4. (Amended) The ion implantation apparatus according to Claim 1, wherein said shield section comprises a shield surface intersecting with straight lines running from points on a surface specified by said opening of said introducing section to points on a surface specified by said outlet aperture of said [ion] beam guide section.

5. (Amended) The ion implantation apparatus according to Claim 2, wherein [said shield section comprises] said shield surface [making an acute angle with the internal wall surface of said guide tube and having] has a flat plate shape.

6. (Amended) The ion implantation apparatus according to Claim 2, wherein said shield section comprises a flat plate having said shield surface [and placed at an acute angle to the internal wall surface of said guide tube], and a frame member for supporting said flat plate.